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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,669	07/15/2003	Partab Jeswani	DP-307786	7172
7590	09/07/2004		EXAMINER	
DELPHI TECHNOLOGIES, INC.			EDGAR, RICHARD A	
Legal Staff P.O. Box 5052 Mail Code: 480-410-202 Troy, MI 48007-5052			ART UNIT	PAPER NUMBER
			3745	
DATE MAILED: 09/07/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/619,669	JESWANI ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Richard Edgar	3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on \_\_\_\_\_.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-20 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-20 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 15 July 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

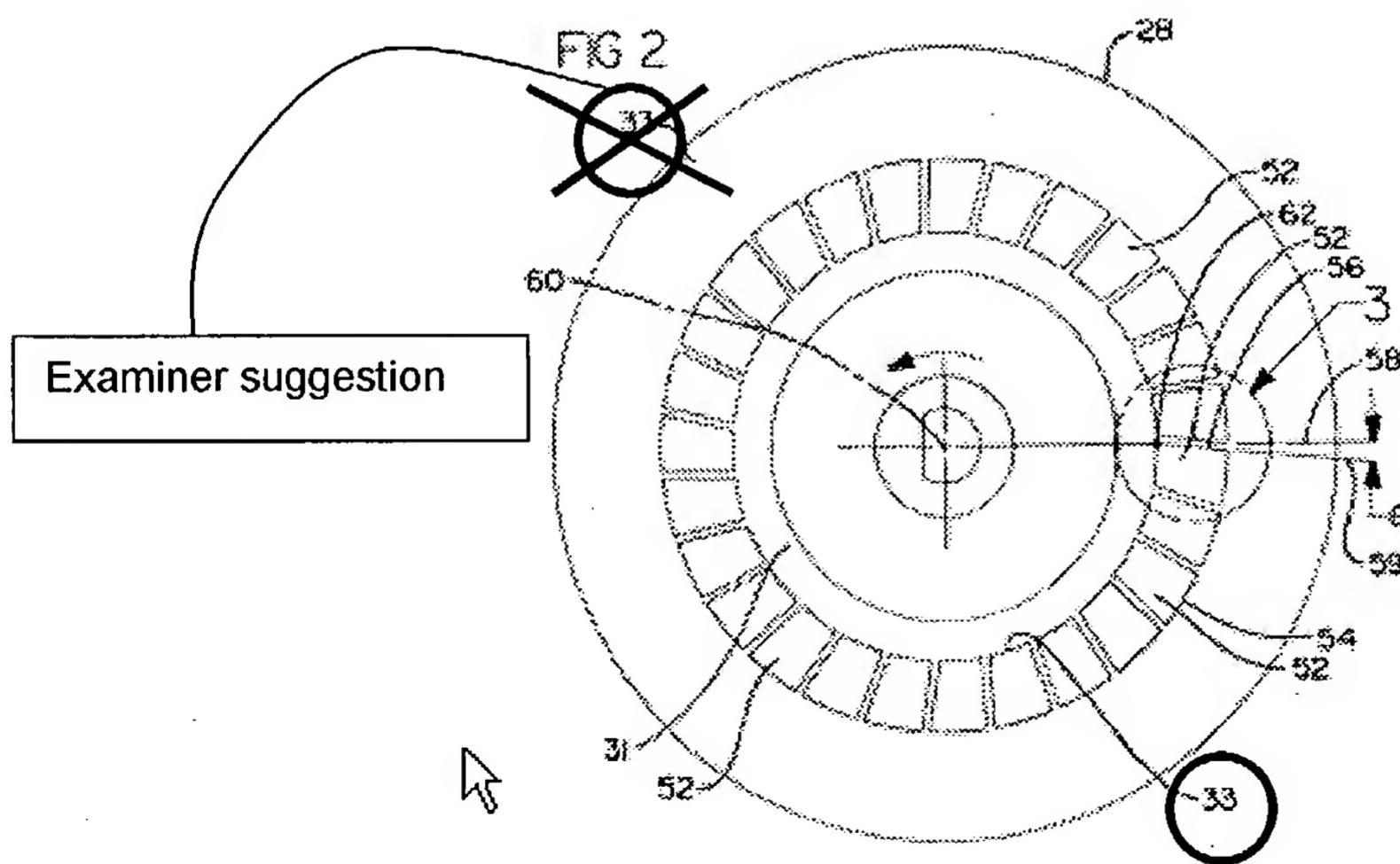
**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/15/03; 1/27/04</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Drawings*

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "33" has been used in Figure 2 to designate both hub/inner diameter and another element (see Figure 2 reproduced below). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.



***Specification***

The disclosure is objected to because of the following informalities:

In paragraph 0026, line 5, "Figure 4" should be -- Figure 6 --.

Appropriate correction is required.

***Claim Objections***

Claims 4 and 12 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claims 4 and 12 require an angle from approximately  $-5^\circ$  to approximately  $20^\circ$ , however, claims 1 and 8 require the blades to be non-radial (i.e. an angle equal to  $0^\circ$ ).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3, 4, 5, 9, 11, 12, 13, and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation "said inner diameter to said outer diameter" in lines 2 through 3. There is insufficient antecedent basis for this limitation in the claim. The examiner suggests changing the dependency so that claim 3 depends from claim 2.

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Claim 4 recites the limitation " said inner diameter to said outer diameter " in lines 2 through 3. There is insufficient antecedent basis for this limitation in the claim. The examiner suggests changing the dependency so that claim 4 depends from claim 2.

Claim 5 recites the limitation " said inner diameter to said outer diameter " in lines 2 through 3. There is insufficient antecedent basis for this limitation in the claim. The examiner suggests changing the dependency so that claim 5 depends from either claim 2 or claim 4.

Claim 9 requires in line 3 "a plurality of blades", however a plurality of blades has previously been recited in claim 8, line 9. The examiner suggests changing "a" to -- said-- in claim 8, line 3.

Claim 11 recites the limitation "said inner diameter to said outer diameter" in lines 2 through 3. There is insufficient antecedent basis for this limitation in the claim. The examiner suggests changing the dependency so that claim 11 depends from claim 10.

Claim 12 recites the limitation "said inner diameter to said outer diameter" in lines 2 through 3. There is insufficient antecedent basis for this limitation in the claim. The examiner suggests changing the dependency so that claim 12 depends from claim 10.

Claim 13 recites the limitation " said inner diameter to said outer diameter " in lines 2 through 3. There is insufficient antecedent basis for this limitation in the claim. The examiner suggests changing the dependency so that claim 13 depends from either claim 10 or claim 11.

Claim 14 recites the limitation "said trailing edge" in lines 2 through 3. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 6, 7, and as far as claims 3 and 4 are definite, are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 2,283,844 (Brady hereinafter).

Brady discloses an impeller comprising: a hub portion 16 adapted for attachment to a rotatable shaft 15; a plurality of blades 27 extending outwardly from said hub portion and disposed circumferentially thereabout; a peripheral ring portion 34 extending outwardly from said blades to shroud said blades (see col. 2, lines 61-63); and

the blades being non-radial relative to a center axis of said hub portion (see column 2, lines 49-50).

The blades have an inner diameter and an outer diameter and extend outwardly at an angle at least greater or less than zero therebetween (see Fig. 2).

The blades are back slanted from the inner diameter to the outer diameter (see col. 2, lines 50-53).

The blades are angled from the inner diameter to the outer diameter at an approximately 20° angle (see col. 3, lines 54-55).

Each blade has a trailing edge that does not extend through the center axis of the impeller (see Fig. 2).

The blades are generally "v"-shaped (see Fig. 1 and col. 3, line 17).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5, as far as it is definite, is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 2,283,844 (Brady hereinafter) in view of United States Patent No. 5,642,981 (Kato et al. hereinafter).

Brady discloses an impeller comprising: a hub portion 16 adapted for attachment to a rotatable shaft 15;

a plurality of blades 27 extending outwardly from said hub portion and disposed circumferentially thereabout;

a peripheral ring portion 34 extending outwardly from said blades to shroud said blades (see col. 2, lines 61-63); and

the blades being non-radial relative to a center axis of said hub portion (see column 2, lines 49-50).

The blades are angled from the inner diameter to the outer diameter at an approximately 20° angle (see col. 3, lines 54-55).

Brady does not expressly disclose a 5° angle.

Kato et al. disclose a fuel pump impeller having non-radial vanes in Figure 13B wherein the vanes are inclined in the opposite direction from rotation of the impeller by an angle theta ( $\theta$ ), wherein  $\theta$  is approximately 5° (col. 10, lines 20-27) for the purpose of enhancing a fuel pump's efficiency.

Since Brady teaches a liquid regenerative pump having inclined vanes and suggests that the vanes should be arranged at "a suitable angle" (col. 2, lines 49-50), and Kato et al. show that a 5° angle is suitable for a fuel pump impeller, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the incline angle of the Brady impeller to be 5°, as taught by Kato et al. for the purpose of enhancing the pump's efficiency when used to pump fuel.

Claims 8, 10, 15, 16, 17, 18, 19, 20 and claims 9, 11, 12 and 14, as far as they are definite, are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 2,283,844 (Brady hereinafter) in view of United States Patent No. 5,415,521 (Hufnagel et al. hereinafter).

Brady shows a pump comprising a pump section having a flow channel and a rotatable impeller cooperating with the flow channel to pump liquid therethrough; and the impeller including a plurality of blades that are non-radial relative to a center axis of the impeller.

The impeller comprises a hub portion attachment to a rotatable shaft, the plurality of blades extending outwardly from the hub portion and disposed circumferentially

thereabout, and a peripheral ring portion extending outwardly from the blades to shroud the blades, wherein each of the blades has a trailing edge.

The blades have an inner diameter and an outer diameter and extend outwardly at an angle at least greater or less than zero therebetween (see Fig. 2).

The blades are back slanted from the inner diameter to the outer diameter (see col. 2, lines 50-53).

The blades are angled from the inner diameter to the outer diameter at an approximately 20° angle (see col. 3, lines 54-55).

Each blade has a trailing edge that does not extend through the center axis of the impeller (see Fig. 2).

The blades are generally "v"-shaped (see Fig. 1 and col. 3, line 17).

Brady does not disclose a fuel pump having the components well-known in the fuel-pump art.

Hufnagel et al. show a typical fuel pump in Figures 1 and 5 comprising a housing 12 having a pump section having an inlet plate 30 and an outlet plate 32 with the impeller 26 disposed axially therebetween. The impeller is further enclosed radially by a spacer ring 29. A motor 20 is disposed adjacent to the outlet plate 32. The arrangement of the fuel pump is configured for the purpose of pumping fuel from a fuel tank to the engine, while allowing the pump to be submerged in the fuel tank.

Since Brady teaches a regenerative pump for pumping liquids and Hufnagel et al. show a regenerative fuel pump used for pumping fuel to an automobile engine, it would have been obvious at the time the invention was made to a person having ordinary skill

in the art to modify the housing of the Brady pump to have a typical fuel pump housing, as shown by Hufnagel et al. for the purpose of pumping fuel from a fuel tank to the engine, while allowing the pump to be submerged in the fuel tank.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 2,283,844 (Brady hereinafter) in view of United States Patent No. 5,415,521 (Hufnagel et al. hereinafter) as applied to claim 8 above, and further in view of United States Patent No. 5,642,981 (Kato et al. hereinafter).

Brady in view of Hufnagel et al. disclose a fuel pump comprising:

a pump section having a flow channel and a rotatable impeller cooperating with the flow channel to pump fuel therethrough;

a motor section disposed adjacent the pump section and having a motor to rotate the impeller; an outlet section disposed adjacent the motor section to allow pumped fuel to exit the fuel pump; and

the impeller including a plurality of blades that are non-radial relative to a center axis thereof.

The blades are angled from the inner diameter to the outer diameter at an approximately 20° angle (see Brady col. 3, lines 54-55).

Neither Brady nor Hufnagel et al. expressly disclose a 5° angle.

Kato et al. disclose a fuel pump impeller having non-radial vanes in Figure 13B wherein the vanes are inclined in the opposite direction from rotation of the impeller by

an angle theta ( $\theta$ ), wherein  $\theta$  is approximately 5° (col. 10, lines 20-27) for the purpose of enhancing a fuel pump's efficiency.

Since Brady in view of Hufnagel et al. teaches a liquid regenerative pump having inclined vanes and suggests that the vanes should be arranged at "a suitable angle" (col. 2, lines 49-50), and Kato et al. show that a 5° angle is suitable for a fuel pump impeller, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the incline angle of the Brady in view of Hufnagel et al. impeller to be 5°, as taught by Kato et al. for the purpose of enhancing the pump's efficiency when used to pump fuel.

#### ***Cited Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. United Kingdom Patent Application GB 2,218,748 A and Japanese Laid-open Patent Application 57-99,298 are each cited for showing a regenerative pump having linear vanes inclined in a direction other than radial with respect to the impellers axis of rotation.

#### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Edgar whose telephone number is (703) 305-0050. The examiner can normally be reached on Monday thru Friday, 8:00 am until 4:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (703) 308-1044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Examiner  
Art Unit 3745

RE



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9/1/04